APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,422	08/14/2003	Nicola Chong-White	021318-002500US	9868

20350   7590   05/09/2007
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER
RIDER, JUSTIN W

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
05/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/642,422	CHONG-WHITE ET AL.
	Examiner	Art Unit
	Justin W. Rider	2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2003*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☒ Claim(s) *38-40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *03/05 (1 Sheet)*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This action is responsive to communications: Application filed 14 August 2003. Claims 1-40 are pending.

Information Disclosure Statement

2.   The information disclosure statement(s) (IDS) submitted on 14 March 2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Specification

3.   The abstract of the disclosure is objected to because the length exceeds the maximum allowable word count of the abstract, which is 25 lines or <u>150 words</u>. Correction is required. See MPEP § 608.01(b).

Claim Objections

4.   Claims 1,2, 4-5 and 11-12 are objected to because of the following informalities:

- Claim 1, lines 13-14, 18, 'parameters' should be --parameter--;

- Claim 2, line 5, 'separates' should be --separate--;

- Claim 11, line 2, 'on' should be --one--; and

- Claim 18, line 4 appears to be incomplete.

The above claims contain a plurality of instances of the clause 'adapted to'. This is considered optional language or language that intends to alter an already existing device for a

specific purpose and does not necessarily limit the scope of the claim. Appropriate correction is

required. See MPEP § 2106.II.C and 2111.04 for further clarification.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims rejected under 35 U.S.C. 103(a) as being unpatentable over **Gao et al. (USPN**

6,574,593) referred to as **Gao** hereinafter in view of **Zinser, Jr. et al. (US 2003/0105628 A1)**

referred to as **Zinser Jr.** hereinafter.

Claim 1: **Gao** discloses a method and apparatus for transcoding telecommunications

signals, the apparatus being adapted to perform a frame classification process and a rate

determination process (col. 7, lines 19-21) associated with a bitstream representing one or more

frames of data encoded according to a first voice compression standard (col. 7, lines 30-33) from

a bitstream representing one or more frames of data according to a second compression standard

or associated with a bitstream representing one or more frames of data encoded according to a

first mode to a bitstream representing one or more frames of data according to a second mode

within a single voice compression standard (col. 7, lines 18-29), the apparatus comprising:

     i. more than one parameter buffers [entry in a representative table] coupled to the source

bitstream unpacker, the one or more parameter buffers being adapted to store the one or more

input parameters and one or more output parameters of the frame classification and rate

determination process from the one or more bitstream frames (col. 9, lines 5-11, *a speech parameter [used to aid in frame classification] or element may be represented by an index location of the closest entry in a representative table of scalars.*); and

    iii. a frame classification and rate determination module coupled to the more than one parameter buffers, the frame classification and rate determination module (col. 7, lines 18-29) being adapted to input one or more of selected classification input parameters (col. 8, lines 54-60), the frame classification and rate determination module being adapted to output a frame class, a rate decision and one or more classification feature parameters (col. 7, lines 45-63).

    However, **Gao** fails to, but **Zinser Jr.** does, specifically disclose a transcoding scheme including a source bitstream unpacker, the source bitstream unpacker being adapted to separate a voice code from a source codec into one or more separate codes representing one or more speech parameters (Fig. 2) and being adapted to generate one or more parameters for input into the frame classification and rate determination process (**Gao**, col. 12, lines 24-31; Fig. 3, *modules 90, 92, and 94 are all present in order to decode and assemble different parameters used to assemble a speech signal.*)

    Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **Zinser Jr.** in view of **Gao** because it retains a high degree of speech quality, takes advantage of newer coding standards becoming readily available, and minimizes the use of computing resources (p. 2, paragraph [0016]).

    <u>Claim 2</u>: **Gao** discloses an apparatus as per claim 1 above, wherein the source bitstream unpacker comprises:

i. a code separator, the code separator being adapted to receive an input from a bitstream frame of data encoded according to a voice compression standard and being adapted to separate one or more indices representing one or more speech compression parameters (col. 12, lines 24-31; Fig. 3, modules **90, 92**, and **94** are all present in order to decode and assemble different input parameters used to assemble a speech signal.);

ii. single or multiple unquantizer modules coupled to the code separator, the single or multiple unquantizer modules being adapted to unquantize one or more codes of each of the speech compression parameters (col. 39, lines 45-53, *a plurality of unquantized pitch gains 352 are generated by the pitch pre-processing module 322.*); and

iii. a classifier input parameter selector coupled to the single or multiple unquantizer modules, the classifier input parameter selected being adapted to select one or more inputs used in a classification process (col. 7, lines 30-35).

Claim 3: **Gao** discloses an apparatus as per claim 1 above, wherein the source bitstream unpacker comprise multiple modules (col. 12, lines 24-31; Fig. 3, *modules 90, 92, and 94 are all present in order to decode and assemble different parameters used to assemble a speech signal.*).

Claim 4: **Gao** discloses an apparatus as per claim 1 above, wherein the source bitstream unpacker comprises (col. 9, lines 5-23):

i. an input parameter buffer, the input parameter buffer being adapted to store one or more of the input parameters of one or more of the frames for the frame classification and rate determination module (*fixed codebook*);

ii. an output parameter buffer coupled to the input parameter buffer, the output parameter

buffer being adapted to store the output parameters of one or more of the frames for the frame

classification and rate determination module (*adaptive codebook*);

iii. more than one intermediate data buffers coupled to the output parameter buffer, the

more than one intermediate data buffers being adapted to store one or more states of a sub-

classifier (*corresponding gains*); and

iv. more than one command buffers coupled to the more than one intermediate data

buffers, the more than one command buffers being adapted to store one or more external control

signals of one or more of the frames (*mode selector*).

Claim 5: **Gao** discloses an apparatus as per claim 1 above, wherein the frame

classification and rate determination module comprises:

i. a classifier comprising one or more feature sub-classifiers, the one or more feature sub-

classifiers being adapted to perform prediction (generate prediction coefficients) of a particular

feature or a pattern classification (col. 13, lines 5-10); and

ii. a final decision module coupled to the one or more feature sub-classifiers, the final

decision module being adapted to receive one or more outputs of each of the one or more

multiple feature sub-classifiers input and output parameters and external control signals (col. 12,

lines 11-13, *rate selection*), the final decision module being adapted to output one or more final

results of the frame class (col. 12, lines 32-38, *includes an F type selector 102 and a plurality of*

excitation reconstruction modules.), the rate decision and one or more predicted values of one or

more of the classification features, the one or more predicted values being associated with an

encoding process of a destination codec (col. 12, lines 45-52).

<u>*Claim 10*</u>: **Gao** discloses an apparatus as per claim 5 above, wherein the one or more

feature subclassifiers comprise a plurality of pre-installed coefficients (col. 9, lines 19-20, *may*

be the ...fixed codebook), the pre-installed coefficients being maintained in memory (col. 9, lines

5-7, *parameter or element...in a representative table*).

<u>*Claim 19*</u>: **Gao** discloses an apparatus as per claim 10 above, wherein the pre-installed

coefficients (*fixed codebook*) in the one of more feature sub-classifiers are data types from

decision rules (col. 47, lines 30-32), weights (col. 47, lines 20-22), and others depending on the

structure and classification or prediction technique of the sub-classifier (col. 47, lines 30-38).

<u>*Claim 20*</u>: **Gao** discloses an apparatus as per claim 10 above, wherein the pre-installed

coefficients (*fixed codebook*) in the one of more feature sub-classifiers are data types from

decision rules (col. 47, lines 30-32), weights (col. 47, lines 20-22), and others when more than

one classification or prediction structure is used for the feature sub-classifiers.

<u>*Claim 21*</u>: **Gao** discloses an apparatus as per claim 10 above, wherein the pre-installed

coefficients in the feature sub-classifiers are derived from a classification construction (*Analysis-*

by-Synthesis) module (col. 3, lines 53-60).

<u>*Claim 22*</u>: **Gao** discloses an apparatus as per claim 21 above, wherein the classifier

construction module comprises:

i. a training set generation module (col. 3, lines 27-28, *performs an LPC analysis to*

determine the short-term predictor parameters.);

ii. a classifier training module and evaluation module (col. 3, lines 54-60, *In the ABS*

approach, the best contribution from the fixed codebook, the best fixed codebook gain, and the

best long-term predictor parameters may be found by synthesizing them using an inverse prediction filter and applying a perceptual weighting measure.).

<u>*Claim 11*</u>: **Gao** discloses an apparatus as per claim 5 above, wherein the one or more feature subclassifiers can be adapted (*adaptive codebook*) based on the second mode and one or more external command signals (*perceptual weighting measures*) (col. 9, lines 16-23).

<u>*Claim 12*</u>: **Gao** discloses an apparatus as per claim 5 above, wherein each of the one or more feature sub-classifiers being adapted to receive an input of selected classification input parameters, past selected classification input parameters, past output parameters, and selected outputs of the other sub-classifiers (col. 14, lines 29-34, *a plurality of predicted LSFs from the LSFs of previous frames are determined.*).

<u>*Claim 18*</u>: **Gao** discloses an apparatus as per claim 5 above, wherein the final decision module may favor preferred rate and class combinations based on the source and destination codec combination in order to improve the quality of the synthesized speech, or to reduce computational complexity, or to otherwise gain a performance [advantage?] (Abstract, *Each codec is selectively activated to encode and decode the speech signals at different bit rates emphasizing different aspects of the speech signal to enhance overall quality of the synthesized speech.*).

<u>*Claim 6*</u>: **Gao** discloses an apparatus as per claim 1 above, wherein the frame classification and rate determination module is a single module or multiple modules (Fig. 9, *Modules 320 (Rate Selection) & 324 (Type Classification)*).

Claim 7: **Gao** discloses an apparatus as per claim 1 above, where the source codec comprise its bitstream information, the bit stream information including pitch gains, fixed codebook gains, and/or spectral shape parameters (col. 9, lines 19-21).

Claim 8: **Gao** discloses an apparatus as per claim 1 above, where the second mode is associated with a single voice compression standard, the single voice compression standard is characterized as a variable rate codec , whereupon the one or more parameters for inputs is associated with a selection of a transmission data rate (col. 4, lines 52-55).

Claim 9: **Gao** discloses an apparatus as per claim 1 above, where the second mode is associated with a single voice compression standard (col. 7, lines 36-38), the single voice compression standard causes classification of the bitstream representing one or more frames of data encoded (col. 7, lines 55-63, *may be used to encode a particular frame based on characterization of the frame...*).

Claim 23: Claim 23 is similar in scope and content to that of claim 1 above, and so therefore is rejected under the same rationale.

Claim 24: **Gao** discloses a method as per claim 23 above, wherein the destination codec and the source codec are the same (col. 12, lines 48-51, *designated to decode bitstreams from the corresponding full and half-rate encoders,*).

Claim 25: **Gao** discloses a method as per claim 23 above, wherein the processing further comprises processing an external command in the classification process (col. 7, lines 19-35, *the mode signal may be generated externally...may be provided to the encoding system 12 to aid in the determination of which of a plurality of codecs may be activated,*).

Claim 30: **Gao** discloses a method as per claim 23 above, wherein the bit rate outputted

from the source codec is associated with a number of bits to represent a single frame (col. 7, lines

45-48, ...*generate 170 bits, 80 bits, 40 bits and 16 bits respectively, per frame.*).

Claim 32: **Gao** discloses a method as per claim 23 above, wherein the number of bits is at

least 80 bits (col. 7, lines 45-48, ...*generate 170 bits, 80 bits, 40 bits and 16 bits respectively, per*

frame.).

Claim 33: Claim 33 is similar in scope and content to that of claim 2 above, and so

therefore is rejected under the same rationale.

Claim 35: Claim 35 is similar in scope and content to that of claim 7 above, and so

therefore is rejected under the same rationale.

Claim 34: Claim 34 is similar in scope and content to that of claim 5 above, and so

therefore is rejected under the same rationale.

Claim 36: **Gao** discloses a method as per claim 34 above, wherein each of the M sub-

classifier is derived from a pattern classification process (col. 5, lines 9-12, *'The type*

classification may be a first type (i.e. a Type One) for frames containing a harmonic structure

[pattern] and a formant structure that do not change rapidly or a second type (i.e. a Type Zero)

for all other frames. ').

Claim 37: **Gao** discloses a method as per claim 34 above, wherein each of the M sub-

classifiers is derived using a large training set of input speech parameters (col. 10, lines 25-35,

'The type classification of one embodiment is dependent on the nature and characteristics of the

speech signal 18, ') and desired output classes [*Type One & Type Zero*] and rates [*Full-rate,*

Half-rate, Quarter-rate, Eighth-rate] (col. 5, lines 9-12, *'The type classification may be a first*

type (i.e. a Type One) for frames containing a harmonic structure [pattern] and a formant

structure that do not change rapidly or a second type (i.e. a Type Zero) for all other frames. ').

7.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Gao** in view of

Bergstrom et al. (USPN 5,809,459) referred to as **Bergstrom** hereinafter.

Claim 14: **Gao** discloses an apparatus as per claim 5 above, however failing to, but

Bergstrom does, disclose wherein an artificial neural network Multi-Layer Perceptron Classifier

is used in order to perform a classification task (col. 4, lines 54-67).

Therefore, it would have been obvious to one having ordinary skill in the art at the time

of invention to include the teachings of **Bergstrom** in the apparatus of **Gao** because it provides

much more consistent results (col. 4, line 60).

8.   Claims 13, 15-16 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable

over **Gao**.

Claims 13 and 15-16: **Gao** discloses an apparatus as per claim 5 above. The parameter

value determination structures of claims 13 and 15-16 are all well known species that produce

results similar to that of claim 14 above. The examiner is taking Official Notice regarding

claims 13 and 15-16 as being suitable alternatives in the art to that of the limitation of claim 14

above.

Therefore, it would have been obvious to one having ordinary skill in the art at the time

of invention to use one of a plurality of known methods of value determination (e.g. decision tree

techniques, rule-based techniques) in order to determine values contributing to outputs regarding

frame classification and rate determination.

Claims 26-27: **Gao** discloses a method as per claim 23 above, wherein past parameters

are processed (col. 58, lines 55-60), however failing to specifically disclose wherein said

parameters are input or output parameters. The examiner is taking Official Notice that said

parameters could represent both input and output parameters. In one sense, the parameters are

determined from past input frames and interpolated to create output parameters for frames that

have been erased or damaged.

Therefore, it would have been obvious to one having ordinary skill in the art at the time

of invention to use the above past parameters as both input and output parameters because the

parameters are processed as both inputs (frame characteristics) and outputs (interpolated to

determine erased frame characteristics).

9.   Claims 17 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gao** in

view of **DeJaco (USPN 5,341,456)** referred to as **DeJaco** hereinafter.

Claim 17: **Gao** discloses an apparatus as per claim 5 above, however failing to, but

DeJaco does, disclose wherein the final decision module enforces the rate, class and

classification feature parameter limitations of the destination codec, so as not to allow illegal rate

transitions from frame to frame (col. 7, lines 38-49, *disclose a rate limiter logic for defining and*

enforcing bounds on rates.).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **DeJaco** in the system of **Gao** because it provides a method for increasing rate determination ability in adverse situations.

Claim 31: **Gao** discloses a method as per claim 30 above, disclosing wherein a frame is represented by 170 bits, however failing to, but **DeJaco** does, disclose wherein a frame is represented by at least 171 bits (col. 4, lines 9-11, *At full rate...encoded for each frame using 171 bits,*).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **DeJaco** in the system of **Gao** because of the reasons outlined above.

Allowable Subject Matter

10.   Claims 38-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 38-40 disclose specific methods for the derivation of training sets of input speech parameters. Wherein the prior art, **Gao**, does disclose the use of training parameters to determine the classification of frames of input speech signals, **Gao** fails to specifically disclose the detailed method of training set derivation as claimed in claims 38-40.

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Chang et al. (USPN 6,226,607), Nandkumar et al. (USPN 5,966,688)**, and **Lehtimäki (USPN 5,953,666)** disclose input speech frame classification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin W. Rider whose telephone number is (571) 270-1068. The examiner can normally be reached on Monday - Friday 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.W.R.
01 May 2007

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600